

Alcohol Fuels

Nick Wagoner
Central Community College

Alcohol Fuels

Ethanol and Methanol
What is the difference?



Methanol

- Faint odor clear liquid
- Contains only one carbon atom
- Commonly known as “wood alcohol”
- Produced from natural gas, coal, or biomass
- Known today as M85
- 85% methanol 15% gasoline

Maintenance

- Needs special engine oil
- M85 compatible replacement parts
- Parts are more expensive

Ethanol

- Made from feed stock
- Usually from corn
- Other grains
- Other agricultural products
- Stored like gasoline

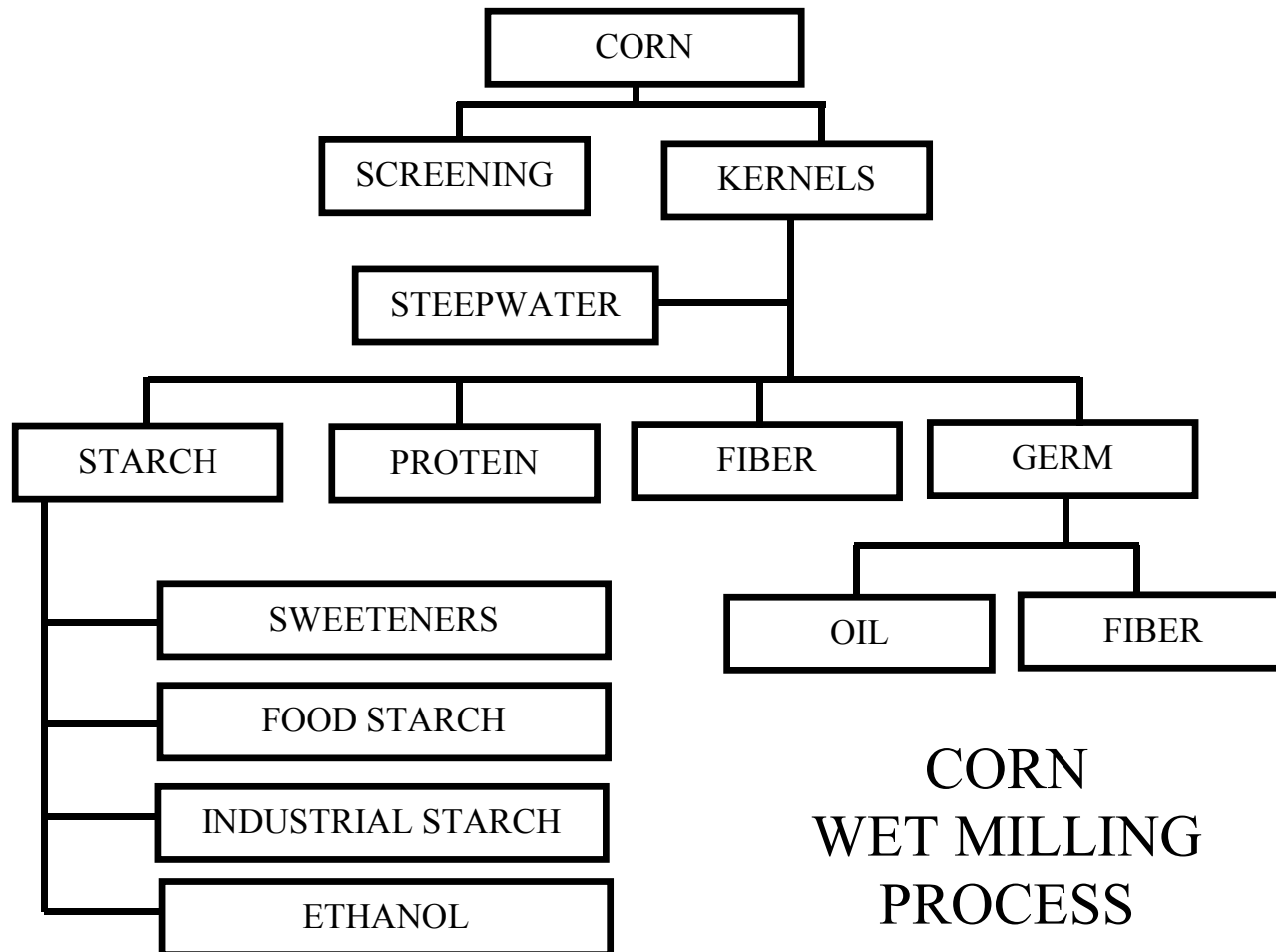
Ethanol Plant



Ethanol Plant

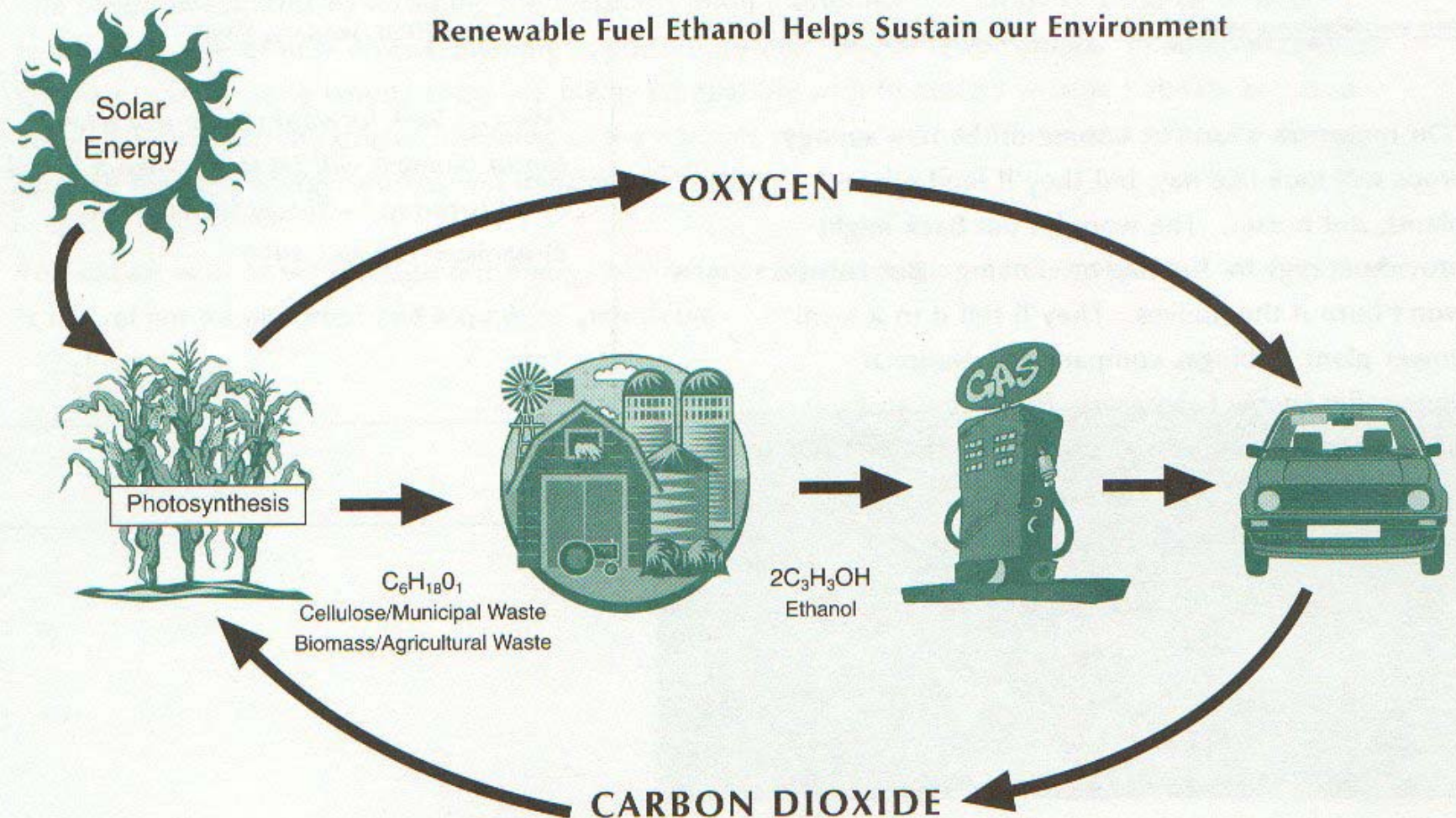


Wet Mill Process



Ethanol & the Environment

Renewable Fuel Ethanol Helps Sustain our Environment



Ethanol - Advantages

- Reduces toxic air pollution
- Reduces greenhouse gas emissions
- Reduces carcinogens
- Reduces burning fossil fuels

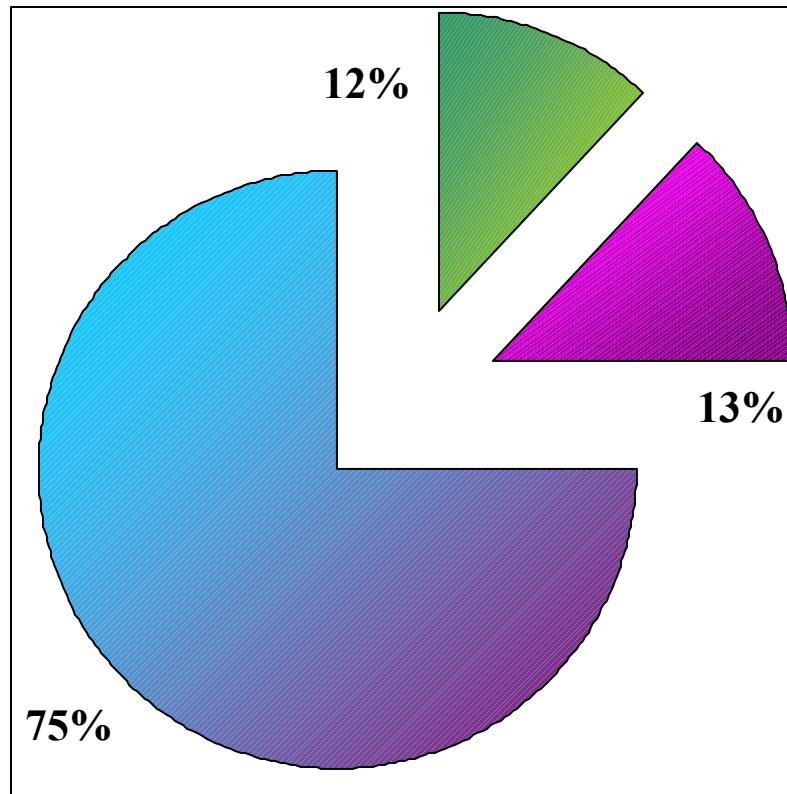
RFG w/Oxygenates, Like Ethanol, Substantially Reduces Harmful Gasoline Emissions

Air Toxics	-28%
Volatile Organic Compounds	-17%
Nitrogen Oxides	-3%
Carbon Monoxide	-13%
Sulfur Oxides	-11%
Carbon Dioxide	-4%
Particulate Matter	-9%
Reduced Cancer Risk	-20% to 30%

Gasoline Contains Benzene

- Benzene is a known carcinogen
 - one of the worst air toxins
- 85% of all benzene in the air we breathe comes from motor vehicle exhaust.

Gasoline – The Largest Source of Man-made Carcinogens



 **Diesel**

 **Industry/Utilities**

 **Gasoline**

Ethanol Burns Cooler

- Lower NO_x by 2 to 3%
- Lower total emission by 28%

Ethanol Facts

- One out of eight gallons of gasoline sold contain ethanol
- Currently ethanol production is at 2 Billion gallons a year
- There are 56 ethanol plants in 20 states



Infrastructure

- Fueling stations already in place
- Same as gasoline
- No special fueling equipment

E85

- 85% ethanol, 15% gasoline
- Available in 19 states
- Burns cleaner than gasoline
- Environmentally friendly

Question

- If E85 is spilled on the ground, can it contaminate the ground water?

Answer

E85 is water soluble

- Non-toxic
- Bio-degradable

E85 Benefits

- E85 good for the environment
- E85 boosts U.S. economy
- E85 increases energy independence
- E85 is good for consumers
- E85 is renewable

Question

- Can cars be retrofitted or converted to use E85?

Answer

Not recommended

- Special material are used for fuel systems

RFG with Fuel Oxygenates, Like Ethanol, Works in all Engine Types

Passenger Vehicles	Approved
Motorcycles	Approved
Small Engines	Approved
Boats	Approved
Portable Power Equip. Manufacturing Assoc.	Approved
Yamaha	Approved
Mercury Marine	Approved
Harley Davidson	Approved
Briggs & Stratton	Approved
Sears	Approved
Honda	Approved
Kawasaki	Approved

What Are Flex-fuel Vehicles (FFV's)

- Flex-fuel vehicles can operate on a blend of alcohol fuels - up to 85%



Question

- Does an FFV cost more than a gasoline model?

Answer

No

- It is standard on some models

Question

- What is the fuel range comparison for an FFV?

Answer

- 5-15% less miles per gallon than gasoline.
- Horsepower increases 5%.

Question

- What happens if E85 is not available for your vehicle?

Answer

Nothing

- FFV can run on regular gasoline.

Question

- What is the difference between a gasoline model or an FFV?

Answer

- One major additional part
 - **a fuel detection sensor**
- The sensor senses the ethanol/gasoline fuel ratio.

Question

- Do FFV's require special motor oil?

Answer

- Ford says No
- Chrysler says Yes

Types of FFV's Available

- All 2000-2001 Ford 3.0L Taurus
- 2001 3.0L Ford Rangers
- Selected 2001 2-door 4.0L Ford Explorers



Types of FFV's Available (cont.)

- 1998-2001 Dodge Caravan's 3.3L Minivan
- 1998-2001 Chrysler Town & Country 3.3L Minivan
- 1998-2001 Plymouth/Chrysler Voyager 3.3L Minivan



Types of FFV's Available

(cont.)

- All 1999-2001 Ford 3.0L Ranger Pickups
- All 1999-2001 Mazda 3.0L B3000 Pickups
- All 2000-2001 Chevrolet Sonoma 2.2L I4



Types of FFV's Available

(cont.)

- In 2002, GM plans to build all Chevy Suburban's, Tahoe's, and Yukon's with 5.3L V8's

FFV's

There are 1.5 million
FFV's on the road today

THANK YOU !!!

Nick Wagoner
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